



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,831	08/14/2001	Francois Andre Germain Eudes	68-00A	9909
23713	7590	05/19/2004	EXAMINER	
GREENLEE WINNER AND SULLIVAN P C 5370 MANHATTAN CIRCLE SUITE 201 BOULDER, CO 80303			HWU, JUNE	
			ART UNIT	PAPER NUMBER
			1661	

DATE MAILED: 05/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/929,831

Applicant(s)

EUDES ET AL.

Examiner

June Hwu

Art Unit

1661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 107-190 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 107-190 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1/24/04, 1/15/02, 7/29/02, 12/4/01
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

Art Unit: 1661

### **DETAILED ACTION**

The amendment filed February 26, 2004 has been acknowledged.

### ***Election/Restrictions***

Applicants' election without traverse of Group I (claims 107-190) filed February 26, 2004 is acknowledged.

### ***Priority***

Claims 107 at step (d), 116, and 170-172 are drawn to process of direct embryogenesis in monocot plants comprising culturing the primary embryos with auxin, cytokinin, and polyamine at the globular stage to induce organogenesis or until adventitious shoots are noticed, and then regenerating these shoots to plantlets. These claims are not supported by the specification and claims of the parent application; therefore, these claims have an effective filing date equal to the filing of this continuation-in-part application (filing date of August 14, 2001).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 124,152 and 177, the genus "*Pennesitum*" is misspelled and should be changed to read -- *Pennisetum* --.

Claims 125 and 153 are indefinite in its recitation of "*amphiploids*" because it is unclear whether "*amphiploids*" applies to *Triticum durum* or to all three species. The word "*amphiploids*" should not be italicized.

Art Unit: 1661

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claim 107 is rejected under 35 U.S.C. 102(a) as being clearly anticipated by Bohanec et al. Claim 107 at step (d) is drawn to a method of inducing direct somatic embryogenesis in monocot plant cells comprising culturing primary embryos to induce organogenesis and eventually into plantlets. Bohanec et al teach a method of inducing direct organogenesis in flower buds of *Allium* in which adventitious shoots develop into plantlets (page 8).

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 107 is rejected under 35 U.S.C. 102(b) as being anticipated by Bohanec et al. Claim 107 is drawn to a method of inducing direct somatic embryogenesis in monocot plant cells and then regenerating them into plantlets. As stated above, Bohanec et al taught a method of inducing direct organogenesis in *Allium* in which adventitious shoots develop into plantlets (page 8).

Claim 107 is rejected under 35 U.S.C. 102(b) as being anticipated by Denchev et al. Denchev et al disclose a method of direct somatic embryogenesis of leaf tissues of orchard grass (page 814), which later develop into plants.

***Claim Rejections - 35 USC § 103***

Art Unit: 1661

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 107-190 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denchev et al in view of Mariani et al, Jong et al, Sankhla et al and Sudharsan et al.

Denchev et al disclose leaf tissues of *Dactylis glomerata* (orchard grass) were genetically transformed by direct somatic embryogenesis from leaf cells bombarded with DNA coated microprojectiles (page 814). The orchard grass leaf tissues were placed in Schenk and Hildebrandt (SH) medium with 30  $\mu$ M of dicamba (page 814, first full paragraph). Denchev et al noted that the highest  $\beta$ -glucuronidase (GUS) expression occurred when the leaf tissues were cultured in 48-96 hour before the bombardment (page 815 and Fig. 1). The transformed embryos grew into plants in which the DNA was extracted from the leaves for analysis. The Polymerase chain reaction (PCR) products were studied by gel electrophoresis and Southern blot hybridization (pages 814-817). Denchev et al do not teach the utilization of auxin, cytokinin

Art Unit: 1661

and polyamine in the induction, culturing and regeneration media. Denchev et al do not show that the scutellum is the starting material for direct somatic embryogenesis.

Mariani et al disclose that direct somatic embryogenesis occur in rice scutella. Immature caryopsis were dissected and transferred to the induction medium (page 224). After going through the culturing and germinating media eventually grew into plantlets (page 225).

Jong et al have shown that *Zizania latifolia* (Manchurian wild rice) embryoids were produced from calli grown in B5 medium supplemented with spermine, kinetin, and Naphthyleneacetic (NAA). Jong et al observed that the induced callus taken from the basal segment of the wild rice showed the highest percent of growth (page 68). These calli develop into embryoids in B5 medium supplemented with  $20 \text{ mg} \cdot \text{l}^{-1}$  spermine,  $1 \text{ mg} \cdot \text{l}^{-1}$  kinetin and  $0.1 \cdot \text{l}^{-1}$  NAA (page 69). The embryoids continued to developed into plantlets from the same medium (page 69).

Sankhla et al disclose that direct somatic embryogenesis occurred without the callus stage in *Echinochloa frumentacea* (Japanese millet). Inflorescence explants were placed on a MS medium supplemented with 5mg/l 2,4-D and 0.5mg/l kinetin. Fifteen percent of the cultures exhibit direct somatic embryos (page 369 and Table 2).

Sudhersan et al teach that high cytokinin induce direct somatic embryogenesis of *Phoenix dactylifera* (date palm). After culturing the leaf tissues in MS medium, Sudhersan et al then transfer the embryogenic calli to 1 mg/l NAA, 3 mg/l 2ip and 3 mg/l kinetin in which plantlets were formed from the higher concentration of cytokinins (page 888).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the culture medium of Denchev et al by supplementing with auxin, cytokinin and polyamine as taught by Jong et al, and using scutella tissues as the starting material as taught by Mariani. Claims 124, 125, 152, 153, 177, and 178 are limited to certain species of monocot

Art Unit: 1661

plants. However, Denchev et al state, "any plant system in which a genetically altered cell, by mutation, transformation, etc., can be induced to produce a new genotype through direct shoot or embryo formation" (pages 817-818). There would have been a reasonable expectation of success given that Sankhla et al has shown that higher auxin level in the induction medium will produce embryogenesis and Sudharsan has shown that higher cytokinin level will produce organogenesis. Thus, the invention as a whole was clearly *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

### **Conclusion**

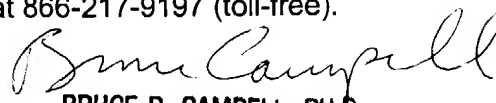
No claims are allowed.

### **Future Correspondence**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to June Hwu whose telephone number is (571) 272-0977. The Examiner can normally be reached Monday through Thursday from 6:30 a.m. to 5:00 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Bruce Campell, can be reached on (571) 272-0974. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
BRUCE R. CAMPPELL, PH.D  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1600